B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

Program: B.E.   **Semester: III**
Branch: Computer Science & Engineering   **Duration: 3 hrs.**
Course Code: 22CS3PCOOJ   **Max Marks: 100**
Course: Object Oriented Java Programming

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

<div style="writing-mode: vertical">**Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.</div>

			UNIT - I	*CO*	*PO*	**Marks**
1	a)		Write a Java program to calculate gross salary and net salary considering the calculations as below. DA=40% of basic HRA=20% of basic CCA=Rs250/- PF=10% of basic PT=Rs100/- Income tax = 10% of gross Gross income: Basic + DA + HRA + CCA Deductions = PF+PT+IT Net income = Gross income – Deductions **Note: Name, Emp ID and Basic salary to be taken as user input.**	*CO3*	*PO3*	**10**
	b)		Analyze the given program and write the expected output for the same.	*CO2*	*PO2*	**5**
	c)		Explain any five features of Java in detail?	*CO1*	*PO1*	**5**

```
class Conversion {
public static void main (String args []) {
    byte b;
    int i = 257;
    double d = 323.142;
    System.out.println("\nConversion of int to byte.");
    b = (byte) i;

    System.out.println("i and b " + i + " " + b);
    System.out.println("\nConversion of double to int.");
    i = (int) d;

    System.out.println("d and i " + d + " " + i);
    System.out.println("\nConversion of double to byte.");
    b = (byte) d;
    System.out.println("d and b " + d + " " + b);
    }
}
```

			UNIT - II			
2	a)	Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed. Create a class Account that stores customer name, account number and type of account. From this derive the classes Cur-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks: a) Accept deposit from customer and update the balance. b) Display the balance. c) Compute and deposit interest d) Permit withdrawal and update the balance Check for the minimum balance, impose penalty if necessary and update the balance.	*CO2, 3*	*PO2, 3*	**12**
	b)	Discuss dynamic method dispatch with an example code.	*CO1*	*PO1*	**8**
			UNIT - III			
3	a)	Create an Interface named Transport with atleast 2 methods. Give meaningful implementation to these methods in classes "Water_Transport", "Road_Transport" and "AirTransport".	*CO3*	*PO3*	**10**
	b)	Describe the five key words of Exception Handling. Show how these keywords are used by writing a Java program.	*CO1*	*PO1*	**10**
			OR			
4	a)	Differentiate between Abstract classes and interfaces. Also discuss how variables in an interface is used?	*CO1*	*PO1*	**10**
	b)	Demonstrate the below Exceptions with a Java code and handle it appropriately. • NullPointerException • ArrayInexOutOfBoundsException • ArithmeticException • IOException	*CO3*	*PO3*	**10**
			UNIT - IV			
5	a)	Write a Java program to create 3 different threads. Thread1 to print the messages "Good morning", Thread 2 to print "Welcome" and Thread 3 to print "How are you?". Incorporate appropriate delay in printing the messages.	*CO3*	*PO3*	**10**
	b)	Write a Java program to print multiplication table of 3 and 5 in a synchronous manner. Use either synchronized method or synchronized block by creating two threads.	*CO3*	*PO3*	**10**

			UNIT - V			
6	a)		Write a Java program to handle any six mouse events- any four under MouseListener and two under MouseMotionListener.	*CO1*	*PO1*	**10**
	b)		Develop a Java program to create the smiley graphic image given below.	*CO3*	*PO3*	**10**
			OR			
7	a)		Write a Java program that changes the background and foreground colors (random colors) on the press of the left mouse button and changes to default colors when the mouse is released. Show the position where the mouse is moving while the mouse is being dragged.	*CO3*	*PO3*	**10**
	b)		Explain the Delegation Event model in event handling with an example.	*CO1*	*PO1*	**10**

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